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24112	7590	02/17/2004	EXAMINER	
COATS & BENNETT, PLLC			DEPPE, BETSY LEE	
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RALEIGH, NC 27602			PAPER NUMBER	

2634

DATE MAILED: 02/17/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/723,152

Applicant(s)

SOUROUR, ESSAM A.

Examiner

Betsy L. Deppe

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 3, 5-7, 10-19, and 25-27 is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☒ Claim(s) 2, 4, 8, 9, 20-24 and 28-32 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2 (5 August 2002).
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations recited in claims 25 and 26 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

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3. The abstract of the disclosure is objected to because it includes form and legal phraseology often used in patent claims (see "comprising" on line 2). Correction is required. See MPEP § 608.01(b).

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the detailed description does not describe the limitations recited in claims 25 and 26.

Claim Objections

5. The claims are objected to because of the following informalities:

in claim 2, lines 7-8, "before subtracting the multipath interference estimate from the signal of interest to adjust a gain and phase of the multipath interference estimate" should be "to adjust a gain and phase of the multipath interference estimate; and subtracting the gain and phase adjusted multipath interference estimate from the gain and phase adjusted signal of interest" for clarification;

in claim 19, line 3, the Examiner suggests changing "in advance of the interference estimates being" to "wherein the scaled interference estimates are"; and

in claim 27, line 2, "to" should be inserted after "and."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 10, 12, and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The detailed disclosure does not appear to describe the "updating values" and "adjusting values" steps recited in claim 10, lines 3-4 and claim 12, lines 4-7, respectively. Although page 20, lines 8-26 describes "selecting" the scaling factors, it does not describe updating or adjusting the scaling factors, as recited in the respective claims.

9. Claims 17 –19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 17, "the at least one primary RAKE finger comprises a plurality of primary RAKE fingers" on lines 1-2 and "the at least one interference estimator comprises a plurality of interference estimators" on lines 4-5 are confusing.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1, 3, 6, 7, 16, 17, 19 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Yugawa (US Patent No. 6,233,272 B1).

12. With regard to claims 1, 3, 6, 7, 16, and 17, Figure 3 of Yugawa discloses the claimed invention correlating the received composite signal ("1-3" and Figure 5) to recover a signal of interest, correlating/determining multipath interference estimates ("4" and Figure 6) and subtracting the multipath interference estimate from the signal of interest (10). (See also column 6, lines 25-48; column 7, lines 3-37; column 8, lines 58-62; column 9, lines 13-16 and column 9, line 61 – column 10, line 27)

13. With regard to claim 19, Yugawa discloses the claimed invention including a plurality of interference estimate scalars. In Figure 6, amplifier 305 scales the interference estimate before it is subtracted from the signal of interest. If there are multiple "unnecessary component demodulator unit (4)" (see column 6, lines 45-48), there must necessary be multiple amplifiers with different levels thereby forming a plurality of interference estimate scalars and reading on the recited limitation.

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14. With regard to claim 27, Yugawa discloses the claimed invention including the mobile terminal comprising a user interface, a transmitter and a receiver. Since Yugawa discloses using the receiver for mobile communications, it is inherent that a mobile terminal has the recited user interface and transmitter. As explained with regard to claim 16 above, Yugawa discloses the recited receiver.

15. Claims 1, 3, 6, 14-17, 19 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Kansakoski et al. (US Patent No. 6,570,909 B1).

16. With regard to claims 1, 3, and 6, Figure 2 of Kansakoski et al. discloses the claimed invention including correlating the received composite signal ("100") to recover a signal of interest, correlating/determining multipath interference estimates ("104-112") and subtracting the multipath interference estimate from the signal of interest ("130" and/or "132"). (See also column 3, line 62 – column 4, line 11)

17. With regard to claims 14 and 15, Kansakoski et al. discloses the claimed invention including the recited limitations. (See column 1, line 66 – column 2, line 46)

18. With regard to claims 16 and 17, Figures 1 and 2 of Kansakoski et al. discloses the claimed invention including at least one primary RAKE finger, at least one interference estimator, and a subtraction circuit wherein there are a plurality of primary RAKE fingers and a plurality of interference estimators.

19. With regard to claim 19, Figure 2 of Kansakoski et al. discloses a plurality of interference estimate scalars ("72-80").

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20. With regard to claim 27, Kansakoski et al. discloses the claimed invention including the mobile terminal comprising a user interface, a transmitter and a receiver. (See column 1, lines 7-33) It is inherent that a mobile terminal has the recited user interface and transmitter.

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yugawa. Yugawa discloses the claimed invention except for determining a value for the scaling factor that maximizes the signal-to-noise plus interference ratio of the signal of interest. It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine a value for the scaling factor that maximizes the signal-to-noise plus interference ratio of the signal of interest in order to increase the likelihood of accurately recovering the transmitted data.

23. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yugawa as applied to claim 6 above, and further in view of Yellin (US Patent No. 6,034,986). Although Yugawa teaches using multiple unnecessary demodulation units (4) (see column 6, lines 45-48), it does not explicitly teach how the multiple outputs are

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subtracted from the combined circuit. Yellin teaches determining the total interference effect before subtracting the interference effect from a combined RAKE signal (see Figures 1 and 3).

Since the multipath erasing unit (10) provides the same result regardless of whether a combined interference signal is inputted or multiple interference signals are inputted, it would have been an obvious matter of design choice to one of ordinary skill in the art at the time the invention was made to combine the outputs of multiple unnecessary demodulation units (4) to determine the total interference and subtract the total interference from the combined RAKE signal in Yugawa. Whether a combiner or a multipath erasing unit (10) with more inputs are used depends on considerations such as the availability of the requisite components.

24. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yugawa as applied to claim 17 above, and further in view of Yellin. Although Yugawa teaches using multiple unnecessary demodulation units (4) (see column 6, lines 45-48), it does not explicitly teach how the multiple outputs are subtracted from the combined circuit. Yellin teaches determining the total interference effect before subtracting the interference effect from a combined RAKE signal (see Figures 1 and 3).

Since the multipath erasing unit (10) provides the same result regardless of whether a combined interference signal is inputted or multiple interference signals are inputted, it would have been an obvious matter of design choice to one of ordinary skill in the art at the time the invention was made to combine the outputs of multiple

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unnecessary demodulation units (4) to determine the total interference and subtract the total interference from the combined RAKE signal in Yugawa. Whether a combiner or a multipath erasing unit (10) with more inputs are used depends on considerations such as the availability of the requisite components.

25. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yugawa as applied to claim 16 above, and further in view of Yellin. Although Yugawa teaches using multiple unnecessary demodulation units (4) (see column 6, lines 45-48), it does not explicitly teach how the multiple outputs are subtracted from the combined circuit. Yellin teaches generating a noise-reduced signal by either (a) determining the total interference effect before subtracting the interference effect from a combined RAKE signal (see Figures 1 and 3) or (b) using a set of individual differencing circuits to subtract each interference component and then a post-subtraction combining circuit (see Figure 3B).

Since either technique produces the same resultant signal, it would have been an obvious matter of design choice to one of ordinary skill in the art at the time the invention was made to use a set of individual differencing circuits and a post-subtraction combining circuit in Yugawa when multiple unnecessary demodulation units (4) are used. Whether a combiner or a set of individual differencing circuits are used are based on considerations such as the availability of the requisite components.

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Allowable Subject Matter


26. Claims 2, 4, 8, 9, 20-24 and 28-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (703) 305-4960. The examiner can normally be reached on Monday-Wednesday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Betsy L. Deppe
Primary Examiner
Art Unit 2634
10 February 2004